

Mr. Brunnow, Observations of the November Meteors. 201

some with, and others without the luminous train ; in short, just what I should imagine would be the effect of a meteoric shower seen by daylight in a very clear atmosphere, and under a cloudless sky. The phenomenon was observed for about half an hour, and frequently two or three of the bodies passed at the same time. We had found the heat of the forenoon very oppressive. I may add, that during the whole display the sky was filled with a phosphorescence so strong that it gave considerable light to the Earth. A river at some distance, which in the clearest moonless nights is invisible from here, glistened quite brightly, even when scarce a star was to be seen through the clouds.

*Observation of the Meteoric Shower of November 13–14, 1866,
at the Observatory of Trinity College, Dublin.* By F.
Brunnow, Astronomer Royal for Ireland.

The display of the meteors on the night of the 13th of November was seen here in all its splendour, as the night with the exception of short intervals was perfectly clear. Being engaged, however, in other observations, I did not commence to observe the meteors until 12 o'clock, when the great shower had already begun. I was placed at a window facing due east, and the number of meteors in the following table refers only to those visible in that part of the heavens.

Number of Meteors.

h	m	m		h	m	m	
12	0	—	5	46	13	25	— 30
	5		10	89		30	35
10		15		115		35	40
15		20		112		40	45
20		25		147		45	50
25		30		172		50	55
30		35		216			Cloudy
35		40		248	14	5	10
40		45		189		15	20
45		50		136		20	25
50		55		152		25	30
55		0		80		30	35
13	0	5		59		35	40
	5	10		Cloudy		40	45
10		15		51		45	50
15		20		44		50	55
20		25		32		55	60
							9

The error of my watch which is to be applied to those times was

$$+ 8^m 12^s.9$$

and thus the time of the maximum may be put down as

$$12^h 45^m 43^s$$

The meteors with very few exceptions seemed to radiate from a point situated on the line joining γ and ϵ Leonis, in which a perpendicular let fall from ζ meets this line. The Right Ascension and Declination of this point is according to Bode's maps ; $\alpha = 150^\circ$ and $\delta = + 22^\circ$, and for 1866 November, $\alpha = 150^\circ 26'$ and $+ 21^\circ 41'$.

On the Meteoric Shower of November 13-14, 1866. By W. Masters, Professor at Kishnaghur College, Bengal.

(Communicated by Sir J. W. F. Herschel, Bart.)

My attention was first drawn to the November meteors in 1833 (I believe), when a little before sunrise, while seated in an upper verandah in Calcutta, and looking south, I observed white, pearly, flaky, I might almost say tiny spiritual things of the shape of Rupert-drops, falling, as I fancied, perpendicularly down, about a yard or two apart, and about fifteen succeeding each other in two or three minutes, within the range of direct vision. Day followed too quick for this exhibition to last long.

Since that time I had been watching their recurrence year after year without success, and was on the look out for them from the 9th to the 13th inst., when only a few stragglers presented themselves. Up to 11 P.M. of the 13th there was no sign of meteors ; but at half-past 4 A.M. of the 14th inst. they were in great abundance over Kishnaghur, in Bengal, about fifty-seven miles due north of Calcutta. I cannot say at what hour they first began to fall, although I have made inquiries of police-watchmen and others. I looked out about half-past four or a quarter to five, and observed them shooting along the sky divergently and very rapidly from some part of the head of *Leo Major*; and from their manner of comporting themselves was immediately convinced that we had come upon the great shoal of November. I was most interested in detecting if possible the precise point of divergence, and it soon became evident that, contrary to received opinion, γ Leonis was not the starting point. After counting fifty in about five minutes, I woke up